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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Frishauf, Holtz, Goodman  
Langer & Chick, P. C.  
767 Third Avenue - 25th Floor  
New York, NY 10017-2023

EXAMINER

LEE, SHUN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 06/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/746,713

Applicant(s)

OHDAIRA ET AL.

Examiner

Shun Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 12-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 12-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/21/00 & 3/17/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/652,500.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The corrected or substitute drawings were received on 17 March 2003. These drawings are acceptable.

### *Claim Objections*

2. Claims 3 and 4 are objected to because of the following informalities:
  - (a) in claim 3, "the synchronous signal delayed by the delay circuit" on lines 6-7 should probably be --said trigger signal--; and
  - (b) in claim 4, "the synchronous signal delayed by the delay circuit" on lines 5-6 should probably be --said trigger signal--.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 2-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is noted that independent claim 1 has been amended to include the limitation of a sampling circuit configured to sample the electric signal in synchronism with each pulse generated by the pulse generator. Dependent

claim 2 recites the limitation of further comprising a synchronous signal generating circuit and that the sampling circuit samples the electric signal from the photodetector in synchronism with the synchronous signal from the synchronous signal generating circuit. The specification discloses a first embodiment (Figs. 2, 3, and 4A-E) comprising a synchronous signal generating circuit (33) and that the sampling circuit (27) samples the electric signal from the photodetector (25) in synchronism with the synchronous signal from the synchronous signal generating circuit (33) and a second embodiment (Figs. 5 and 6A-F) comprising a sampling circuit (27) is configured to sample the electric signal in synchronism with each pulse generated by the pulse generator (45). However, there is no disclosure of the sampling circuit (27) configured to sample the electric signal in synchronism with both the synchronous signal from the synchronous signal generating circuit (33) and each pulse generated by the pulse generator (45).

In addition, it is noted that dependent claim 4 has been amended to include the limitation of further comprising a pulse generator and that the sampling circuit samples the electric signal from the photodetector in response to the pulse signal generated by the pulse generator. There is no disclosure of the sampling circuit (27) configured to sample the electric signal in synchronism with both the synchronous signal from the synchronous signal generating circuit (33) and each pulse generated by the pulse generator (45) and further comprising a second pulse generator and that the sampling circuit samples the electric signal from the photodetector in response to the pulse signal generated by the pulse generator.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the pulse generator" in line 8. The antecedent basis for this limitation in the claim is unclear since it could be referring to either "a pulse generator" as recited in line 7 of claim 1 or "a pulse generator" as recited in line 2 of claim 4.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 5, 7, 12, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Baer (US 5,866,911).

In regard to claims 1-3 and 12, Baer discloses (Fig. 7) a laser scanning microscope comprising:

- (a) a pulse laser oscillator (70) configured to oscillate a pulse laser beam to excite a sample (19);
- (b) a scanning mirror (16) configured to scan the pulse laser beam;
- (c) a photodetector (23) configured to detect light from the sample (19) and output an electric signal;

- (d) a laser oscillation synchronous signal generating circuit (74, 75, 76) configured to receive a laser oscillation signal (*i.e.*, detect oscillation of the pulse laser beam) from the pulse laser oscillator (70), and generate (*i.e.*, output) a laser oscillation synchronous signal in synchronism with the oscillation of the pulse laser beam;
- (e) a delay circuit in the synchronous signal generating circuit (74, 75, 76) configured to output a trigger signal obtained by delaying the laser oscillation synchronous signal (*i.e.*, electrically adjusting to provide an interval from zero to several picoseconds; column 11, lines 37-44);
- (f) a sampling circuit configured to sample the electric signal output from the photodetector (*i.e.*, output of detector 23 is gated; column 13, lines 56-60) in synchronism with each gate control signal (*i.e.*, pulse signal generated by a pulse generator) having a pulse width smaller than the time period of oscillation of the pulse laser beam is inherent since a pulse signal is necessarily present in order to gate the output of the detector off during the time that direct scattering light from a quenching laser (71 which is synchronized to the pulse laser oscillator 70; column 11, lines 24-31) is falling on the detector (*i.e.*, the sampling circuit starts to samples the electric signal from the photodetector when the photodetector is gated on by each gate control signal in synchronism with the trigger signal which was obtained by delaying the laser oscillation synchronous signal); and
- (g) a memory (24) configured to accumulate data output by the sampling circuit.

In regard to claim 7 which is dependent on claim 1, Baer also discloses (column 11, lines 18-24; Fig. 7) that the pulse laser oscillator (70) is a mode locked ultra fast

pulse laser (generating pulse durations of 100 fs to several picoseconds) which excites fluorescence from the sample due to multiphoton excitation (*i.e.*, two photon excitation; column 10, lines 57-65).

In regard to claim **5** (which is dependent on claim 3) and claim **14** (which is dependent on claim 12), Baer also discloses (column 11, 37-44) that a delay set by the delay circuit is a fixed value (*i.e.*, controlled phase shift).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baer (US 5,866,911) in view of Lin (US 5,252,834).

In regard to claim 4 which is dependent on claim 3 in so far as understood, the laser scanning microscope of Baer lacks a second pulse generator. Lin teaches (column 9, lines 12-20) a second pulse generator (*i.e.*, pulse amplifier 29 in Fig. 1) for amplifying the control pulse. Therefore, it would have been obvious to one having ordinary skill in the art to provide a second pulse generator in the laser scanning microscope of Baer, in order to amplify the control pulse as taught by Lin.

12. Claims 6, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baer (US 5,866,911) in view of Hänninen *et al.* (US 5,523,573).

In regard to claim 6 (which is dependent on claim 3) and claims 13 and 15 (which are dependent on claim 12), the laser scanning microscope of Baer lacks a means for changing a delay set by the delay circuit (*e.g.*, an external input circuit). Hänninen *et al.* teach (column 7, lines 44-46) that time resolved detection involves starting detection after a delay with respect to the excitation pulse and to delay detection until background signal is sufficiently low. Baer also discloses (column 13, lines 56-60) to gate the output of the detector during the time that direct scattering light from the quenching laser is falling on the detector. Therefore, it would have been obvious to one having ordinary skill in the art to provide a delay changing means (*e.g.*, an external input circuit) in the laser scanning microscope of Baer, in order to change a delay set by the delay circuit so as to delay detection until background signal (*e.g.*, due to light from the lasers) is sufficiently low.



***Response to Arguments***

13. Applicant's arguments filed 17 March 2003 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e.*, detect changes of the detection signal over time) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Tuesday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SL  
May 22, 2003

  
**DAVID PORTA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**